REMARKS

This is in response to the Office Action dated April 05, 2005, in which Claims 1-6, 8-13, 15 and 16 were rejected under 35 U.S.C. 103(a). The rejection is respectfully traversed according to the following remarks, and it is respectfully submitted that all the pending claims are patentable.

Rejection Over Davies et al. (US Patent No: 6,650,844)

In the Office Action, Claims 1-2, 5-6, 8-9, 13 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al. (US Patent No: 6,650,844), Claims 3-4 and 10-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al. in view of Gehrke et al. (US Patent No: 6,310,992), and Claim 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al. in view of Mizzi (US Patent No: 4,545,023).

The rejection is respectfully traversed because the primary reference, Davies et al., that the Examiner relied upon for the rejection is not a valid reference.

Davies et al. is a US Patent issued at November 18, 2003, which was more than three years after the current application was filed at April 07, 2000. The earliest filing date of Davies et al. is at February 28, 2000, which was at least months later than the conception date of the subject matters as claimed in the current application.

Therefore, Davies et al. cannot be used as a prior art reference to reject Applicant's claims under 35 U.S.C. 103(a) because the invention of the present invention was conceived prior to the earliest filing date of Davies et al. on February 28, 1999.

Submitted herewith for the Examiner's consideration is the Declaration of the applicants/assignee under 35 C.F.R. 1.131 ("Applicants' Declaration"). The Applicant's Declaration sets forth facts evidencing that the invention described and claimed in the present application was conceived prior to the filing date of Davies et al.

Rejection Over Bishop (US Patent No. 6,038,355) in view of Jokerst et al. (US Patent No. 5,280,184)

Claims 1-2, 5-6, 8-9, 13 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bishop (US Patent No: 6,038,355) in view of Jokerst et al. (US Patent No: 5,280,184).

In the previous Office Action issued at July 25, 2002, the Examiner cited Bishop in view of Ozeki et al. (US Patent No. 6,317,242) to reject Claims 1-3, 6-10 and 13-15. In response with this previous Office Action, the Applicant filed an amendment at January 9, 2003 and discussed the patentably distinguishable feature of the application over the cited reference, particularly, the primary reference Bishop. The patentably distinguishable feature includes "a plurality of **independent** optical connections", which is also claimed in the currently presented Claims 1-6, 8-13, 15 and 16. Following the amendment at January 9, 2002, the Examiner issued an Office Action at April 11, 2003, in which the rejection over Bishop was removed.

As discussed in the amendment at January 9, 2003, Bishop discloses optical connections between transmitters and receivers or between circuit boards **sharing the same optical paths** 62 or 64. That is, the optical connections between the transmitters and receivers or between the circuit boards are **not independent** with each other. Bishop thus teaches away the claimed subject matter "a plurality of independent optical connections". However, the Examiner is silent about such feature in the current Office Action.

Further, as recognized by the Examiner, Bishop fails to teach the optical pathways formed solely through air between circuit cards. However, the Examiner further relies on Jokerst for the teaching of optical interconnection formed solely through air and indicates that it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate optical interface devices that communicate through air such as the ones of Jokerst for the optical interface circuits in the communication system of Bishop in order to provide a wireless optical communication system and to easily repair or remove each of the circuit boards.

As clearly shown in Figure 1 by Bishop, the optical interfaces 31 that include the transmitters 34 and the detectors 60 on the modules 14, 16, 18 are actually blocked with each

other by the circuit cards 22. As understood, optical the circuit cards 22 used for forming the daughter card modules are typically non-transparent for optical signal. Therefore, for each module 14, 16 or 18, beam splitter, mirrors 44, 46, 48, 50, 52, 54 are required to reflect and guide the signal output from the transmitter 34 to the optical buses 62 and 64, through which the signal can be delivered to the specific detector 58. If one of ordinary skilled in the art modifies Bishop by incorporating the feature of "optical pathways formed solely through air between circuit cards", as the transmitters 34 and detectors 58 are formed on the optical interfaces 31 blocked from each other by the circuit cards 22, the optical connections between modules will thus be blocked, such that the intended purpose (the communication through transmitters and detectors via the common optical bus) was rendered unsatisfactory. Therefore, there is no suggestion or motivation to modify the references.

Further, the Examiner relied on Jokerst et al. for the teaching of "optical interconnection is formed solely through air". In the teaching col. 6, lines 44-47 and col. 7, lines 31-46 quoted by the Examiner, Jokerst et al. actually teaches:

"FIG. 1 illustrates vertical communication between layers of a three dimension ***integrated circuit*** *wherein an emitter (E) sends signals to a detector (D)* ***through an integrated circuit layer(s);"****; and*

"As further shown in FIG. 1, electromagnetic communication devices are positioned throughout the integrated circuit 10 to permit vertical communication among and ***through IC layers****. An emitter (E) 16 can communicate through layers 12 to a detector (D) 18. The emitter 16 can* ***communicate through both layers*** *12, 14 to a detector. Moreover, the emitter 16 can communicate simultaneously to both detectors 18, 22, if desired.*

The electromagnetic communication devices can also be switched so as to operate as both emitters and detectors, or as transceiver (E/D). For instance, as illustrated in FIG. 1, electromagnetic communication devices 24, 26 can operate as both emitters and detectors ***through the layer 12****. Hence, an infinite number of communication configurations are envisioned."*

According to the teachings quoted by the Examiner, Jockerst et al. teaches optical communication **through IC layers 12, 14**, Jockerst et al. does not teach the optical communication between circuit cards solely through air.

As it is well known in the art, the multiple layers of an integrated circuit, which is typically formed with a thickness in micrometers, are directly deposited or formed on each other normally. To minimize the size of the integrated circuit and to ensure proper multilayer interconnection, air gap between the layers is often to be avoided during fabrication. That is, as understood, no air layer or air gap is expected between adjacent layers of an integrated circuit during normal fabrication process.

Jokerst et al. discloses an integrated circuit 10 that has multiple layers 12, 14. In Fig. 1, Jokerst et al. shows a top layer 12, a bottom layer 14, and three dots to indicate that numeral layers can be formed between the top and bottom layers 12 and 14. There is no teaching or suggestion that any air layer or air gap exists between the top and bottom layers 12 and 14. As discussed above, an integrated circuit does not normally include an air layer or air gap between adjacent layers 12, 14. Jokerst et al. only suggests that the optical interconnection between the layers 12, 14 have to be transparent to the layers 12, 14. There is lack of suggestion or desirability of an optical pathway solely through air since an air layer or air gap does not even exist between the layers 12, 14. Therefore, Jokerst et al. does not only fail to teach the optical pathway between the layers 12 and 14 solely through air, but also fails to provide any motivation to establish an optical pathway through air.

As the Bishop and Jokerst et al., individually or in combination, fail to teach every element as claimed, the rejection over Claims 1-2, 5-6, 8-9, 13 and 15 is respectfully traversed.

With regard to Claims 8 and 15, Jokerst teaches electromagnetic communication devices, including emitters (E) 16, detector (D) 18, 22. Jokerst also teaches electromagnetic communication device can be switched as transceivers (E/D) (col. 7, lines 31-46 and Figure 1). However, nowhere does Jokerst teach that the emitters are LED's (light-emitting **diode**) and the detectors are photodiodes.

Regarding Claims 2 and 9, the Examiner asserted that Bishop discloses optically transmitted infrared radiation (col. 6, line 24-26). As a matter of fact, in the quoted teaching, Bishop discloses "*The optical communications are sent Asynchronous Transfer Mode (ATM) protocol using a tunable LED laser, although other protocols and other types of transmitter*

can be used". The teaching quoted by the Examiner does not suggest the infrared transmission.

Claims 3-4 and 10-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bishop in view of Jokerst et al. and in further view of Croft et al. (US Patent No: 5,864,708).

As discussed above, both Bishop and Jokerst fails to teach the optical interconnection between circuit cards solely through air.

Further, as understood, Asynchronous Transfer Mode (ATM) is a cell relay network protocol which encodes data traffic into small fixed sized (53 byte) cells instead of variable sized *packets*. The example SONET for ATM disclosed by Bishop, namely, the synchronous optical network, is an international standard for transmitting signal over **fiber optic** network. In contrast, the standardized infrared communication scheme is a protocol used for wireless communication. As Bishop fails to suggest or show any motivation for using wireless optical communication between circuit cards, the teaching of a standard (ATM, SONET) used for wired network does not show any no suggestion or motivation for one to modify Bishop and Jokerst et al. by incorporating the infrared communicaiton scheme.

Therefore, the rejection over Claims 3-4 and 10-12 are respectfully traversed.

Claim 16 was rejected under 35 U.S.C. 103(a) as being unpatentable over Bishop in view of Jokerst et al. and in further view of Cargin Jr. et al. (US Patent No: 6,023,147).

As discussed above, Bishop discloses a plurlaity of curcuit cards have optical interconnection via a plurality of optical elements such as beam splitters and mirrors and two optical buses. It appears that, with so many optical elements, the whole system can hardly be fitted within a handheld device as claimed in Claim 16. That is, there shows no desirability of the claimed subject matter. Therefore, the rejection over Claim 16 is respectuflly traversed.

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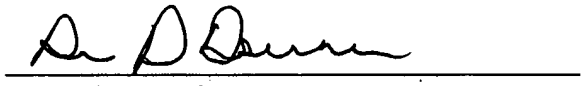
Respectfully submitted,

Date: July 5,. 2005 By: 

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